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EXAMINER	
IEVA, NICHOLAS	

ART UNIT	PAPER NUMBER
2836	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,945	Applicant(s) FUJISAWA ET AL.	
	Examiner NICHOLAS IEVA	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,6-8,13-19,22,23,25 and 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,6-8,13-19,22,23,25 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to the Amendments

1. The previous office action, entered on 06 January 2009, has been withdrawn since it was inadvertently issued during the requested 3 month suspension.

2. Applicant's amendment to the claims, filed on 06 March 2009, is acknowledged.

Claim Objections

3. **Claim 1, 7 and 8** are objected to because of the following informalities: the third and fourth lines of theses claims include the phase "the first electrode and the second electrode being applied voltages between said first electrode and said second electrode." It is unclear to the examiner what this limitation means and the structure that this limitation brings to the claim. For the purpose of examining these claims the Examiner is interpreting the above limitation to mean "the first electrode and the second electrode are being applied voltages from a power supply that is connected between said first electrode and said second electrode."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made

to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 1, 4, 6, 13, 15, 16, 22 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)**.

Consider **claim 1**, Shamouilian et al. discloses a bipolar electrostatic chuck which has a first electrode **24** and a second electrode **22** in an interior of an insulating material **26**, said first electrode connected to a first voltage source **48** and said second electrode connected to a second voltage source **46**, so to generate at least an attracting performance by a gradient force, and thus attracts a sample by allowing a surface of the insulating material to function as a sample attracting plane, characterized in that:

the insulating material **26** comprises an upper insulating layer **26c**, the first electrode **24**, an inter-electrode insulating layer **26b**, the second electrode **22**, and a lower insulating layer **26a** which are by laminated in the order of distance from the sample attracting plane;

that the first electrode is formed in a comb-like configuration (a series of first electrodes that when combined resembles a comb-like structure); and

when the insulating material is viewed from a side cross-sectional view, the first electrode has a plurality of gaps, and the second electrode has a plurality of areas that are not overlapped with the first electrode (Shamouilian; figures 1 2a and 2b; column 2, line 54 - column 3, line 47; column 4, lines 34-62; column 5, lines 19-59; column 3, line 56 – column 4, line 20; column 5, lines 60-67).

Since Shamoulian's first electrode **24** (unipolar or bipolar) that is powered by a first power source would attract the sample, and Shamoulian's second electrode **22** (unipolar or bipolar) that is powered by a second power source would also attract the sample, it be inherent that a gradient force (fringe field) would be produced by the combination of the first and second electrodes that would attract the sample by allowing the surface of the insulating material to function as a sample attracting plane.

Also, the strength of the gradient force (fringe field) that would be produced will be controlled my a number for factors which includes the voltage applied to the first and second electrodes, the distance between the first and second electrodes, the size and shape of the electrodes, and the

position/placement of the first and second electrodes. Furthermore, the strength of the gradient force (fringe field) at Shamoulian's device produces is not claimed, what matters is that Shamoulilian teaches a bipolar electrostatic chuck that "generates at least an attracting performance by a gradient force."

Furthermore, Shamouilian et al. teaches that the size and shape of the first and second electrode can vary according to the size and shape of the chuck and the workpiece, in order to maximize the area that the electrodes have in contact with the workpiece and improve the clamping force applied to a workpiece (Shamouilian; column 5, lines 19-31).

Also, the Applicant admits on page 14 of his arguments filed on 07 March 2008 that a bipolar arrangement of the electrodes would produce a gradient force.

However, Shamouilian does not clearly disclose that the first electrode and the second electrode are being applied voltages from a power supply that is connected between said first electrode and said second electrode.

Benjamin et al. teaches a bipolar electrostatic chuck that comprises a first electrode **216b** and a second electrode **216a**, wherein the first electrode and the second electrode are being applied voltages from a power supply **46** that is connected between said first electrode and said second electrode, so to generate at least an attracting performance by a gradient force (fringe field), and is capable of attracting a sample by allowing a surface of the insulating material to function as a sample attracting plane, wherein:

the insulating material **210** comprises an upper insulating layer (upper half of **217**), the first electrode **216b**, an inter-electrode insulating layer (the insulating layer between said first and second electrode), and the second electrode **216b**, and a lower insulating layer (lower half of **217**), which are laminated in the order of distance from the sample attracting plane (Benjamin; figure 2A, 1B and 1C; column 5, lines 35-62; column 2, line 46 – column 3, line 2).

Since Benjamin's first electrode that is powered by a first power source of a first polarity would attract the sample, and Benjamin's second electrode that is powered by a second power source of a different polarity would also attract the sample, it be inherent that a gradient force (fringe field) would be produced by the combination of the first and second electrodes that would attract the sample by allowing the surface of the insulating material to function as a sample attracting plane. Also, the Applicant admits on page 14 of his arguments filed on 07 March 2008 that a bipolar arrangement of the electrodes would produce a gradient force.

Furthermore, the strength of the gradient force (fringe field) that would be produced will be controlled my a number for factors which includes the voltage applied to the first and second electrodes, the distance between the first and second electrodes, the size and shape of the electrodes, and the position/placement of the first and second electrodes. Furthermore, the strength of the gradient force (fringe field) is not claimed, what matters is that Benjamin

teaches a bipolar electrostatic chuck that "generates at least an attracting performance by a gradient force."

Also, the examiner further notes that Benjamin teaches the claimed limitation "are laminated in the order of distance from the sample attracting plane", because this claimed limitation is a product by process limitation, which means that this claimed limitation does not add any structure to the claimed invention. So even though Benjamin does not explicitly teach the limitation "are laminated in the order of distance from the sample attracting plane", Benjamin's method would still achieve the same end result of having a insulating material that comprises an upper insulating layer, a first electrode, an inter-electrode insulating layer, and the second electrode, and a lower insulating layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Benjamin et al. into the bipolar electrostatic chuck taught by Shamouilian et al., because Benjamin's teachings would provided an alternative means of connecting the first and second electrode that would have generated at least an attracting performance by a gradient force, and would have attracted a sample by allowing a surface of the insulating material to function as a sample attracting plane.

Consider **claim 4**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above.

Furthermore, Shamouilian et al. teaches that the second electrode is formed in a comb-like configuration (a series of second electrodes that when

combined resembles a comb like structure); when the insulating material is viewed from a side cross-sectional view (Shamouilian; figure 2b; column 2, lines 54-61; column 4, lines 34-62; column 5, lines 19-59).

Also, Shamouilian et al. teaches that the size and shape of the first and second electrode can vary according to the size and shape of the chuck and the workpiece, in order to maximize the area that the electrodes have in contact with the workpiece and improve the clamping force applied to a workpiece (Shamouilian; column 5, lines 19-31).

However, Shamouilian and Benjamin et al. do not specifically that the second electrode is not overlapped with the first electrode, in a normal line direction of the sample attracting.

It would have been an obvious matter of design choice to have had the second electrode not overlapped with the first electrode, since such a modification would have involved a mere change in size of a component. A change in size is recognized as being within the level of ordinary skill in the art.

Consider **claim 6**, Shamouilian et al. teaches that the second electrode is formed in a plane having a given planar area, when the sample attracting plane is viewed from a side cross-sectional view; and a part of the second electrode is overlapped with the first electrode in a normal line direction of the sample attracting plane (Shamouilian; figure 2a and 2b; column 2, lines 54-61; column 4, lines 34-62; column 5, lines 19-59).

Consider **claim 13**, Shamouilian et al. teaches that the distance between the first electrode **24** and the second electrode **22** is 1000 µm or equal to or more than 1 µm and equal to or less than 100 µm (Shamouilian; figure 2b; column 6, lines 16-29; claim 7; claim 43).

Consider **claim 15**, Shamouilian et al. teaches that the inter-electrode insulating layer **26b** is formed of a resin layer made of polyimide (Shamouilian; figure 2b; column 6, lines 47-53; column 5, lines 61-67; column 8, lines 16-61; column 9, lines 51-63).

Consider **claim 16**, Shamouilian et al. teaches that the resin layer is formed of one resin film (polyimide) (Shamouilian; figure 2b; column 6, lines 47-53; column 5, lines 61-67; column 8, lines 16-61; column 9, lines 51-63).

Consider **claim 22**, Shamouilian et al. teaches that that the inter-electrode insulating layer has a thickness of 100 micrometers **26b** (Shamouilian; figure 2b; column 6, lines 16-53-28).

Consider **claim 23**, Shamouilian et al. teaches that that the upper insulating layer has a thickness of 100 micrometers **26c** (Shamouilian; figure 2b; column 6, lines 16-53-28).

7. **Claims 7, 8, 13, 15, 16, 22, 23 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)** and **Sill et al. (US 6,431,112 B1)**.

Consider **claim 7**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above (please, refer back to the rejections of claims 1 and 6 above), but they do not disclose the first electrode is formed in a lattice-like configuration.

In the same field of endeavor, electrostatic chucks, Sill et al. teaches a electrode that is formed in a lattice-like configuration (Sill's electrode is comprised of interlaced wires that from a lattice-like configuration) (Skill; column 7, lines 10-23).

Sill also mention that this configuration allows the insulating layer to be formed around the electrode in a strong physical interaction, thus the reducing the physical stress upon the insulating layer of the chuck during thermal cycling (Sill; column 7, lines 10-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Sill et al. into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al., because Sill's teachings would have reduced the physical stress an electrode puts upon the insulating layer of the chuck during thermal cycling.

Consider **claim 8**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above (please, refer back to the rejections of claims 1 and 6 above), but they do not disclose the first electrode is formed in a lattice-like configuration or mesh configuration.

In the same field of endeavor, electrostatic chucks, Sill et al. teaches a electrode that is formed in a mesh configuration having a plurality of openings each within a given area (Sill; column 7, lines 10-23).

Sill also mention that the mesh allows the insulating layer to be formed around the electrode in a strong physical interaction, thus the reducing the physical stress upon the insulating layer of the chuck during thermal cycling (Sill; column 7, lines 10-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Sill et al. into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al., because Sill's teachings would have reduced the physical stress an electrode puts upon the insulating layer of the chuck during thermal cycling.

Consider **claim 13**, Shamouilian et al. teaches that the distance between the first electrode **24** and the second electrode **22** is 1000 μm or equal to or more than 1 μm and equal to or less than 100 μm (Shamouilian; figure 2b; column 6, lines 16-29; claim 7; claim 43).

Consider **claim 15**, Shamouilian et al. teaches that the inter-electrode insulating layer **26b** is formed of a resin layer made of polyimide (Shamouilian; figure 2b; column 6, lines 47-53; column 5, lines 61-67; column 8, lines 16-61; column 9, lines 51-63).

Consider **claim 16**, Shamouilian et al. teaches that the resin layer is formed of one resin film (polyimide) (Shamouilian; figure 2b; column 6, lines 47-53; column 5, lines 61-67; column 8, lines 16-61; column 9, lines 51-63).

Consider **claim 22**, Shamouilian et al. teaches that that the inter-electrode insulating layer has a thickness of 100 micrometers **26b** (Shamouilian; figure 2b; column 6, lines 16-53-28).

Consider **claim 23**, Shamouilian et al. teaches that that the upper insulating layer has a thickness of 100 micrometers **26c** (Shamouilian; figure 2b; column 6, lines 16-53-28).

Consider **claim 25**, Shamouilian et al., Benjamin et al. and Sill eat al. disclose a bipolar electrostatic chuck above, but they do not disclose that the size of each of the openings (gaps) of the fist electrode is in a range of 0.1 to 3.0 mm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have to have had the size of each of the openings (gaps) of the fist electrode in a range of 0.1 to 3.0 mm, Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. Furthermore, changing the size of the openings (gaps) of the first electrode would affect the electromagnetic field and the thermal properties of the overall electrostatic chuck.

8. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information

disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)** and **Kitabayashi et al. (US 6,768,627 B1)**.

Consider **claim 14**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above,

Furthermore, Shamouilian et al. teaches that the width of the inter-electrode gap (distance between the first and second electrode) is about 1 μm to about 0.1 mm or about 1 mm to about 100 mm and that the width of the first electrode is about 1 μm to about 0.1 mm (Shamouilian; figure 2b; column 6, lines 16-29; claim 7; claim 43).

However, they do not explicitly disclose that the width (z) of the first electrode and the width (z) of the inter-electrode gap (distance between the first and second electrode) are made equal to each other, and that z is in the range of 0.15 to .5 mm.

In the same field of endeavor, electrostatic chucks, Kitabayashi et al. teaches that when one is trying to electrostatically attract a glass substrate, one sets the width of the electrodes in the range of 0.5 to 1.0mm and the width (distance) between the electrode are in the range of 0.5 to 1.0 mm (Kitabayashi; figure 1; column 9, lines 32-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Kitabayashi et al. into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al., because Kitabayashi's teachings would have provided an

alternative configuration of the widths of the electrodes and the interelectrode gap (distance between the first and second electrode) that would have been preferred when one wants to attract a glass substrate.

However, they do not explicitly disclose that the width (z) of the first electrode and the width (z) of the inter-electrode gap (distance between the first and second electrode) are made equal to each other.

It would have be obvious to one of ordinary skill in the art to have picked a value of 0.5 mm for the width (z) of the electrodes and for the width (distance) (z) between the electrodes, because this value would make the width (z) of the electrodes and the width (z) between the electrodes equal to each other and have a width (z) in the range of 0.15 and 0.5 mm.

Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness.

9. **Claims 17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)** and **Ito (US Pub. 2003/0015521)**, which was supplied in the applicant's information disclosure statement.

Consider **claims 17**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above, but they do not disclose that the inter-electrode

insulating layer is formed of a ceramic layer made of one or more elements selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride, zirconia and titania.

In the same field of endeavor, electrostatic chucks (Ito; paragraph 0111-0113), Ito teaches an inter-electrode insulating layer that is formed of a ceramic layer made of one element selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride and zirconia (Ito; figures 1a and 1b; paragraph 0018, 0021-0024; 0039; 0111-0113).

It is well known that these materials have high thermal conductivity, good insulative properties, and can withstand high temperatures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Ito into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al., because Ito's teachings would have increased the devices ability to withstand higher temperatures because these materials have a higher thermal conductivity.

Consider **claim 19**, Ito teaches an electrically conductive layer that is further formed on the surface of the insulating material; and the surface of the electrically conductive layer is capable of serving as the sample attracting plane (Ito; claim 18).

10. **Claims 17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)**, **Sill et**

al. (US 6,431,112 B1) and **Ito (US Pub. 2003/0015521)**, which was supplied in the applicant's information disclosure statement.

Consider **claims 17**, Shamouilian et al., Benjamin et al. and Sill et al. disclose a bipolar electrostatic chuck above, but they do not disclose that the inter-electrode insulating layer is formed of a ceramic layer made of one or more elements selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride, zirconia and titania.

In the same field of endeavor, electrostatic chucks (Ito; paragraph 0111-0113), Ito teaches an inter-electrode insulating layer that is formed of a ceramic layer made of one element selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride and zirconia (Ito; figures 1a and 1b; paragraph 0018, 0021-0024; 0039; 0111-0113).

It is well known that these materials have high thermal conductivity, good insulative properties, and can withstand high temperatures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Ito into the bipolar electrostatic chuck taught by Shamouilian et al., Benjamin et al. and Sill et al., because Ito's teachings would have increased the devices ability to withstand higher temperatures because these materials have a higher thermal conductivity.

Consider **claim 19**, Ito teaches an electrically conductive layer that is further formed on the surface of the insulating material; and the surface of the

electrically conductive layer is capable of serving as the sample attracting plane (Ito; claim 18).

11. **Claims 17, 18 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)** and **Shufflebotham et al. (WO 97/23945)**, which was supplied in the applicant's information disclosure statement.

Consider **claims 17**, Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above, but they do not disclose that the inter-electrode insulating layer is formed of a ceramic layer made of one or more elements selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride, zirconia and titania.

In the same field of endeavor, electrostatic chucks, Shufflebotham et al. teaches an inter-electrode insulating layer that is formed of a ceramic layer made of silicon nitride (Shufflebotham; page 9, lines 5-14).

Shufflebotham also mentions that the use of a nitride as a preferred coating is selected because it gives the device an abrasion resistant surface which protects the electrodes, it has a high dielectric constant which improves the clamping force applied to the workpiece, and it has a high breakdown voltage (Shufflebotham; page 9, lines 7-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of

Shufflebotham et al. into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al. because Shufflebotham's teachings would have improved the clamping force applied to the workpiece.

Consider **claims 18**, Shufflebotham et al. teaches that the inter-electrode insulating layer is formed of silicon dioxide (Shufflebotham; page 9, lines 7-14).

Consider **claim 28** Shamouilian et al. and Benjamin et al. disclose a bipolar electrostatic chuck above, but they do not disclose that said bipolar electrostatic chuck is capable of attracting an insulating substrate.

Shufflebotham et al. teaches a bipolar electrostatic chuck that is capable of attracting an insulating substrate (Shufflebotham; claim 27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Shufflebotham into the bipolar electrostatic chuck taught by Shamouilian et al. and Benjamin et al. because Shufflebotham's teachings would have given one the ability to attract an insulating substrate.

12. **Claims 17, 18 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shamouilian et al. (US 5,646,814)**, which was supplied in the applicant's information disclosure statement, in view of **Benjamin et al. (US 6,563,076 B1)**, **Sill et al. (US 6,431,112 B1)** and **Shufflebotham et al. (WO 97/23945)**, which was supplied in the applicant's information disclosure statement.

Consider **claims 17**, Shamouilian et al., Benjamin et al. and Sill et al. disclose a bipolar electrostatic chuck above, but they do not disclose that the

inter-electrode insulating layer is formed of a ceramic layer made of one or more elements selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon nitride, zirconia and titania.

In the same field of endeavor, electrostatic chucks, Shufflebotham et al. teaches an inter-electrode insulating layer that is formed of a ceramic layer made of silicon nitride (Shufflebotham; page 9, lines 5-14).

Shufflebotham also mentions that the use of a nitride as a preferred coating is selected because it gives the device an abrasion resistant surface which protects the electrodes, it has a high dielectric constant which improves the clamping force applied to the workpiece, and it has a high breakdown voltage (Shufflebotham; page 9, lines 7-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Shufflebotham et al. into the bipolar electrostatic chuck taught by Shamouilian et al., Benjamin et al. and Sill et al. because Shufflebotham's teachings would have improved the clamping force applied to the workpiece.

Consider **claims 18**, Shufflebotham et al. teaches that the inter-electrode insulating layer is formed of silicon dioxide (Shufflebotham; page 9, lines 7-14).

Consider **claim 28**, Shamouilian et al., Benjamin et al. and Sill et al. disclose a bipolar electrostatic chuck above, but they do not disclose that said bipolar electrostatic chuck is capable of attracting an insulating substrate.

Shufflebotham et al. teaches a bipolar electrostatic chuck that is capable of attracting an insulating substrate (Shufflebotham; claim 27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Shufflebotham into the bipolar electrostatic chuck taught by Shamouilian et al., Benjamin et al. and Sill et al., because Shufflebotham's teachings would have given one the ability to attract an insulating substrate.

Response to Arguments

13. Applicant's arguments with respect to claims 1, 4, 6, 7, 8, 13-19, 22, 23, 25 and 28 have been considered but are moot in view of the new ground(s) of rejection.

14. The newly add limitation of "the first electrode and the second electrode being applied voltages between said first electrode and said second electrode" to claims 1, 7 and 8, necessitated the new ground(s) of rejection.

15. Applicant's arguments with respect to claim 28 regarding the newly add limitation of "the bipolar electrostatic chuck that is capable of attracting an insulating substrate" has been considered but are moot in view of the new ground(s) of rejection.

16. The newly add limitation of "the bipolar electrostatic chuck that is capable of attracting an insulating substrate" to claim 28, necessitated the new ground(s) of rejection.

17. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

18. Examiner respectfully disagrees with the Applicant that the combination of Shamoulilian and Benjamin does not teach generating at least an attracting performance by a gradient force, and attracts a sample by allowing a surface of the insulating material to function as a sample attracting plane. Please refer back to the rejection of claim 1 above.

19. Furthermore, Examiner respectfully disagrees with the Applicant that the combination of Shamoulilian and Benjamin does not teach generating at least an attracting performance by a gradient force, and attracts a sample by allowing a surface of the insulating material to function as a sample attracting plane. Please refer back to the objection and rejection of claim 1 above.

20. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., “are moved in cooperation with each other via the inter-electrode insulating layer”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Horwitz et al. (US 5,103,367)** teaches electrodes formed circular configuration. **Naotoshi et al. (JP 2003-179128)**, which was supplied in the applicant's information disclosure statement, teaches electrodes formed in a band-like comb teeth configuration. **Katata et al. (US 6,500,686 B2)**, which was supplied in the applicant's information disclosure statement, teaches electrodes formed circular configuration and formed in a band-like comb teeth configuration. Both **Hausmann (US 6,104,596)** and **Herchen (US Pub. 2001/0046112 A1)** teach an electrode formed in a mesh (curb) configuration. Both **Masashi et al. (JP 08-064663)** and **Koichi (JP 11-251417)**, which both were supplied in the applicant's information disclosure statement, teach an electrically conductive layer that is formed on the surface of the insulating material. **Junji (JP 2003-318251)**, which was supplied in the applicant's information disclosure statement, teaches an insulating layer formed of silicon. **Masuda et al. (US 2002/0109955)**, which was supplied in the applicant's information disclosure statement, teaches a bipolar electrostatic chuck comprising a first electrode and a second electrode in an interior of an insulating material, said first electrode and second electrode being applied voltages that are different from each other.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS IEVA whose telephone number is (571)270-

1270. The examiner can normally be reached on M-TH (7:30am - 5pm), and F (7:30am - 4pm), EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on (571) 272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated

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